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ABSTRACT

This study described the professional learning of teacher educators in graduate schools which allowed, by the consideration of different pedagogical practices, the construction of bridges between those practices and theories supporting them. It analyzed the effectiveness of teaching and learning case studies in promoting teachers' personal learning processes, describing how case studies and the case method facilitated understanding of the construction of teachers' pedagogical content knowledge and the knowledge base for teaching. Data came from oral and written reports, observations of small and large group discussions, and individual case studies. Analyzing cases more directly connected to teaching practice. Preservice experience was central in participants' discussions. Other elements that facilitated case comprehension included: the domain of specific interest, integration between disciplines, school culture, personal variables, and peers. Teachers considered professional learning a lifelong continuum. Some denied the existence of professional learning during preservice education, asserting that learning related to the demands of practice. Others noted the importance of such aspects of preservice education as learning to prepare classes, guarantee student feedback, and understand the effect of teacher behavior on student listening. Results suggest that the use of teaching cases has potential for revealing indicators related to the knowledge base for teaching and nature and processes of construction of pedagogical content knowledge. (SM)

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LEARNING FROM CASES AND BRIDGING SOME 'THEORY-PRACTICE' GAPS[1]

ED 477 809

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Although the current Brazilian backdrop demonstrates that investments in the elaboration, implementation and assessment of educational public policies concerning teacher education having made, it can be said that emphasis has been given to initial and continuing teacher education processes of elementary, medium and high school teachers considering different knowledge areas. Higher education is still an area in which initiative is weaker.

Post-graduate programs in education, as a rule, receive professionals of different areas of knowledge. Those are usually teachers from colleges or universities, and often teacher educators. Even though there is great and constant claim from these professionals for spaces destined to the analysis of pedagogical practices regarding the *learning to teach* process, there has been usually no space in the post-graduate programs for the practice of teaching, neither the systematized discussion of specific aspects of said practice.

This paper concerns an experience involving the professional learning of teacher educators in graduate schools (master and doctorate programs), which allowed, by the consideration of different pedagogical practices, the construction of bridges between those practices and the theories that may support them.

More specifically, this work aims to analyze some of the contributions of the use and elaboration of *teaching and learning case studies*, which are here considered as valuable tools for promoting and investigating the teachers' personal learning processes. It initially considers some of the characteristics of the teachers' thinking and of the knowledge base for teaching, involving different types of knowledge and ways to access and construct them, and finally, case studies (more specifically *instructional cases* related to curricular contents). It also dissects a case developed by a teacher, aiming to highlight pedagogical content knowledge and other types of knowledge involved (including those

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originated from possible *learning through experience*), as well as the construction of bridges between theory and practice. Finally, broader analyses of general aspects of the process of teachers' learning made evident by the teacher educators, considering formative aspects of the graduate programs are presented.

1. TEACHER THEORIZATION, KNOWLEDGE BASE AND TEACHING CASES.

Teachers' theorizations imply the process of the attribution of meanings to education. They comprise a set of beliefs, images and concepts regarding what constitute: an educated person, the nature of knowledge, society, ways of learning and student discipline, among other aspects and constructs. The experiences and meanings attributed to the different events, in turn, are personal: the teachers' practical theories differ when different teachers are concerned. Teaching, under that perspective, can be considered as a practical activity, guided by some theory.

Educational literature regarding the learning and professional development processes of teachers has demonstrated that the teachers' personal theories (also called *implicit theories*, *practical* and *tacit theories*, among other terms) have influence in the configuration of pedagogical practices (Schön, 1987; Russell, 1993; Shulman, 1986, 1987; Barnes, 1992, among others). Professional practices, which are translated into the teachers' behavior, encompass beliefs, thoughts, interpretations, choices, values and commitments.

Practical theories are often implicit theories, which can be sometimes conflicting with professional practices. The teachers, in turn, work using different theories of practice. They learn to make instructional decisions, to conduct classes, to choose, use and evaluate teaching strategies, to maintain discipline, etc., through their direct experiences as students and as teachers. Their knowledge, in that way, is personal and particular to specific situations and their personal theories could be considered as being their real personal knowledge about teaching.

To Russell (1993), propositional knowledge and experience are different categories. The learning of propositional knowledge is familiar and practically does not present problems to those involved in situations of formal educations. Learning by experience, though, is not a process that is clearly understood:

> Teachers' professional frames have both an individual history of development and a relationship to the conditions and history of teaching as a profession. They are generated during the interaction with

> persons, events and constraints that constitute teachers' work context, and represent the teacher's interpretation of the roles and strategies available to him or her within the particular situation. Professional frames may be generated as individual solutions to practical problems or to value dilemmas, but at the same time they are interpretive hypotheses that may have to be negotiated with colleagues and shared so that the teachers reinforce one another. The frames are not easily open to change for they are sometimes maintained by what is arguably the teachers' most significant reference group, the colleagues with whom they collaborate day by day (Barnes, 1992, p 17-18).

Teachers construct referential frames along their interactions with people and aspects of the institutions they work with, in a way that new resulting conceptions are not entirely defined by context, nor entirely chosen by them. The re-elaboration of the teachers' referential frames constitutes, in this context, the mediation between theory and practice, revealing new meanings for theory, and new strategies for practice. Such referential frames are dynamic and anchored in values. Frequently, the most significative frames are: **pre-conceptions** (about the nature of what is being taught; about the subject matter they teach and how to interpret it; about teaching and how it manifests itself – though modified by the vision of what can be accomplished in the classroom; about the students), and **beliefs** related to priorities and limitations inherent to the institutional and professional context, the nature of their professional commitment and the continuity of their career as teachers (Barnes, 1992).

The teachers' patterns of teaching are based on implicit models of what knowledge consists, and how it is constructed. Whatever the dominant model of learning in the teacher's mindset, it shall have great influence in the activities of classroom interaction and in the way school knowledge is considered. To understand the teachers' personal referential frames, besides the consideration of values, beliefs and knowledge acquired along their schooling trajectory and their learning and teaching experiences, it is necessary for the *ethos* of the school in which the teacher works to be also considered. In other words, the priorities, practices and values that characterize a school, as well as the subgroup of rules that differentiate groups within a same school must be considered (Barnes, 1992). It is also important to take into account the knowledge of other sets of reference that a given teacher might adopt, such as those deriving from affiliation to political groups (not only political parties, but especially class unions or any association related to teaching as a profession). Besides the analysis of the referential frames, it must also be considered the so-called *professional knowledge*, more specifically those related to knowledge base for teaching.

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Such knowledge involves the apprehension of knowledge of diversified nature, and also the ways to construct such knowledge.

Knowledge base for teaching, as conceived by Shulman (1987), is understood as the body of understandings, knowledge of different nature, abilities, competencies, among others, which result from the intersection of specific content knowledge and pedagogical knowledge, as well as from the teacher's capacity of transforming the knowledge he or she possesses of the specific content, into ways of action that are pedagogically effective and adaptable to the variations of skill and repertoire presented by the students. Personal base knowledge, in turn, is considered as a logical model of knowledge for the professional base knowledge for teaching. It is developed under the perspective that teachers acquire a body of professional knowledge that includes not only specific content knowledge, but pedagogical knowledge as well. Among as foundations of said base knowledge, we can mention: connections between the schooling and the teachers' experiences; the pedagogical reflective process through which the teachers' knowledge is shaped; theories and/or proposals related to the educational phenomenon and to the teaching and learning processes; results of empirical research; specific content knowledge; curricular guidelines; subject matters and instructional material; the public educational policies; the organization and functioning of the educational process in schools (curriculum, textbook, instructional materials, budget, career plans, etc.); research about schooling, social organization, human learning and development, other social and cultural phenomena that affect what the teachers do and think, and the so-called *wisdom of practice*.

There are many types of knowledge which the teachers use as anchors when they make decisions in their courses (Shulman, 1986, 1987); specific content knowledge; pedagogical content knowledge; knowledge about their students (including motivation, developmental and learning processes, learning styles, etc.); knowledge about curriculum; knowledge related to the goals of education and the schooling process, and pedagogical content knowledge that assumes specific nature, considering that it implies the subject matter content knowledge and the other types of knowledge. Each teacher constructs such knowledge during his or her professional life.

The teachers – both when preparing for teaching a specific content topic and during the process of instruction – end up developing a new type of knowledge of the specific area,

which is improved and enriched by other types of knowledge (student knowledge, curriculum, content related to other areas, context, etc.), called *pedagogical content knowledge*. It consists of a new type of knowledge, specific to teaching.

> In addition to general pedagogical and subject matter knowledge, our model includes pedagogical content knowledge. This knowledge includes an understanding of what it means to teach a particular topic as well as knowledge of the principles and techniques required to do so. Framed by a conceptualization of subject matter for teaching, teachers hold knowledge about how to teach the subject, how learners learn the subject (what are subject-specific difficulties in learning, what are the developmental capabilities of students for acquiring particular concepts, what are common misconceptions), how curricular materials are organized in the subject area, and how particular topics are best include in the curriculum. Influenced by both subject matter and pedagogical knowledge, pedagogical content knowledge emerges and grows as teachers transform their content knowledge for the purposes of teaching. How these kinds of knowledge relate to one another remains a mystery to us (Wilson, S.M., Shulman, L.S. & Richert, A.E, 1987, p.118).

Pedagogical content knowledge, though, does not consist of a repertoire of multiple representations of specific content knowledge (Wilson, Shulman & Richert, 1987:119): it is characterized by a way of thinking that facilitates the generation of these transformations – the development of what the authors call *pedagogical reasoning*. Teachers learn to reason pedagogically about the content of the subject matter, and the authors believe that said pedagogical reasoning is important to well succeeded teaching. The pedagogical reasoning process manifested by the teachers is used as a way towards the understanding of the knowledge base of teaching. To those authors, the transformation of specific content knowledge assumes a central role for teaching. It is knowledge that is related to ways of thinking that facilitate the generation of these transformations, that is, the development of pedagogical reasoning.

Case studies constitute, among other strategies, powerful tools for both the promotion and the investigation of teachers' referential frames and process of construction of pedagogical content knowledge (Shulman, 1986). The work here presented is grounded on that assumption. Shulman (1996) points out several arguments related to the use of case studies and case methods in the learning and professional development of teaching. To that author, the knowledge of cases is related to the knowledge of specific events that imply detailed documentations and description. Although these cases constitute reports of events or of sequences of events, the knowledge that they represent makes them cases (Shulman, 1986). The author introduces the functions of learning based on cases in the education of teachers as an answer for two central issues: learning through experience and the construction of bridges between theory and practice. To him, the assumption that pre-

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service and in-service teachers should reflect about their own practice is correct and arduously demanding. The use of case studies as an unity of reflexive analysis would help in the organization of the reflection process. He also considers that a significative part of teacher education is generic, consisting of general principles and maxims that could be applied broadly to a vast gamut of situations. The case studies could constitute, in that process, instances on which teaching specifics – subject matter and situation – could be considered. Another element pointed by the author refers to the fact that teaching is an uncertain and unpredictable activity, in ways that make it difficult, under that point of view, to be rigidly directed by a formal theory, even though it continues to be responsible for both student insights and wrong conceptions. The cases would come into use whenever reason, discourse, and professional memory would be concerned.

To Shulman (1996), the narrative of each case should be developed around a plan, an incomplete intervention that gives opportunity for surprises to interrupt the expected scenarios, creating situations under which the teachers may re-examine, re-plan, revise or reflect over his or her own original plans, modifying them. The essence of the case resides in a problem, surprise or failure. It is precisely because of that, that it is considered educative. It requires analysis and the attribution of meanings, and it demands answers (improvised and/or deliberated) to the problems:

> We do not learn from experience; we learn by thinking about our experience. A case takes the raw material of first-order experience and renders it narratively into a second-order experience. A case is the re-collected, re-told, re-experienced and re-flected version of a direct experience. The process of remembering, retelling, reliving and reflecting is the process of learning from experience (Shulman, 1996, p. 208). [...] There are four processes at work in learning from the writing and contemplation of cases. These are enactment, narration, connection (or recounting) and abstraction. Stories begin in the raw experience itself, are transformed into cases through narration, become part of a network of narratives through connections with other cases, and both enrich and are enriched by theory when they are analyzed, interpreted and/or classified in the teachers' conversations (p. 209).

It is in that context that the author contemplates the role of theory. To conceive narrative as a case is to engage in an act of theory:

> The transformation of an experience into a narrative is itself an act of selection and conceptualization. In converting a first-order experience into a second-order experience through narrative, an author has chosen to frame an experience in a particular way, has placed that experience in more general terms. When the reader of a case connects that narrative to his or her own experiences, a second kind of selection has taken place. [...] It appears to be a characteristic of our species that stories explicitly breed yet other stories and, implicitly, the categories of analysis that connect stories to one another conceptually. Even in the concrete act of narrative, underlying theoretical categories emerge and often become explicit (Shulman, 1996, p. 209).

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2. The Research

The question that drove the present investigation is: *How may case studies and case method, used as strategies for professional learning in graduate school courses, offer elements for the comprehension of the construction process of the knowledge base for teaching and of the pedagogical content knowledge of teachers?*

2.1 Goals and Methodology

This is an analytic-descriptive study of qualitative nature. It aims to describe and analyze aspects of the process of the professional learning of teacher educators – focusing on the base knowledge for teaching –, through the use of case studies.

The study that was carried out involved pedagogical interventions that consisted on the adoption of case studies and case method as instructional strategies that sought to promote the professional development of teacher educators, from situations that could propitiate the reflection on pedagogical practice, as well as the research of said intervention, in ways to obtain answers (even if provisory answers, given the exploratory nature of this study) to the research question. It concerned the description and analysis of the processes highlighted as study objects; the personal and group interpretations of the participants; the concepts, values and analyses of the subjects involved, in ways to illuminate the process of professional development, having as its axis the constructs of the professional knowledge base for teaching and the construction of the content pedagogical knowledge.

The *case method* involved comprehended two phases: a) the study of written cases extracted from the educational literature, with an initial individual outline handed out to the participants for their analysis and interpretation, and b) the personal construction of a case study from concrete classroom experiences involving the teaching and learning process. The individual written reports made by the teacher educators, in both phases, were initially discussed in small groups and then by all of the participants, and involved the debate of questions proposed by the outline, as well as of other questions and themes that surfaced during the process.

There are no definitive, single true answers for each of the questions in each of the cases. The collective discussion, though, proved to be necessary to establish common tendencies and make multiple *points of view* evident.

2.2. The Intervention: Analyzing and Writing Cases

The interventions, with the use of formal teaching and learning situations, occurred in natural classroom environment, and involved a group of 22 teacher educators. The data obtained consist of oral and written reports made by the teacher educator; written reports from the observation and discussion of small groups and the group as a whole, and individually constructed case studies. In a period of two school semesters, seven cases taken from the educational literature were analyzed, and 22 case studies were written, one by each of the participants. From the case studies written by the teacher educators, one of them was individually and collectively analyzed by the participants. An initial step outline regarding the cases already documented in literature was always offered for discussion and analysis, as well as a proceedings outline for the elaboration of the cases. The discussions implied the experience of day-to-day school and classroom practices, and the elaboration of an investigative work, which concluded with the construction of a pedagogical strategy to be used in courses of teacher education. The cases were written during the first school semester, and analyzed during the second.

The present study refers to one of the cases elaborated by one of the teacher educators, focusing aspects of a specific learning and teaching experience as well as aspects of the processes of professional development of teaching made evident by the participants during the discussion of the cases.

Juliana

Juliana, a seven-year-old girl, began her studies at a school in the city of Campinas – SP/Brazil having a woman named Marli as her teacher. In that school, every student, or at least most of them, started learning how to play a given musical instrument having already some previous knowledge of how to play it, based on what they had learned during an obligatory course of "Children's Musical Education".

Problems started to come up when Juliana could not understand the proportion between music notes. The teacher explained the differences to Juliana the best she could, but Juliana just wouldn't understand that a semibreve is worth the double of a minim, and that it should be counted in a quaternary tempo – 1 2 3 4 for the semibreve, 1 2 for the minim.

"I've tried every way I know to make her understand, I've used all of the known didactic techniques...little bricks, pet and car sounds, train and ship whistles...and nothing...I've counted holding the key down with her finger, so that she could notice how long should the sound last, but even that way she couldn't understand the difference." said Marli.

In every class, the explanations had to start from zero, since Juliana returned as if nothing had been taught before. It was worse when the sequence of notes that came up was semibreve / minim / minim / semibreve. All of them had the same duration for Juliana. The concepts of double and half were simply unknown to her.

One day, though, Marli had an idea: she took Juliana to the kitchen, grabbed an apple and showed it to the girl.

"You see, this is a whole apple. It's just like a semibreve. If I cut it in half, I've got two pieces, and those pieces are worth a minim each," said Marli, halving the apple with a knife.

Juliana smiled broadly. The teacher thought she finally understood the concept and asked "If I join both halves, what will I get?"

That's when the girl said "Ah! So if I join both pieces I'll get one big, glued apple".

The teacher almost lost it. But she decided to try it again, differently.

"Juliana, which takes the longest time to eat, an entire apple or half an apple?"

"The entire apple," she answered.

"So, an entire apple takes longer to eat than just half an apple, and that's just like the semibreve, which lasts longer than the minim, which lasts exactly half the time the semibreve lasts"

Juliana then concluded:

"Is that why we hold our finger and count 1 2 3 4 for the semibreve and 1 2 for the minim?"

After that lesson, any proportion problems that came up in classes could be solved when Juliana thought of the apple.

Renata Frederico

Federal University of São Carlos - Class of 1998

3. Presenting some of the Results

The case study "Juliana" had a great impact in the group of participants. Of all the cases studied by the different groups, it was the case that they felt was the most absorbing. Initially, the same systematic that was used for the other cases was used for "Juliana", but group discussions demonstrated issues that implied deeper theoretical discussions and diversified interpretations. Such discussions led to different views on how the human being knows and learns. The case was explored by the teacher educators considering specificities of diverse subject matter areas, under different theoretical lines. It was equally possible, through intense exchange between the members of the group, to create conditions for each participant to exteriorize his or her implicit theories regarding the concepts involved in the case. The case "Juliana" was seen under the perspective of the cognitivist, constructivist, socio-interacionist and behavioral analysis theoretical approaches.

Following, a few results grouped in two blocks shall be presented: one concerning teaching knowledge base (involving three categories: specific content knowledge, pedagogical knowledge, and pedagogical content knowledge), and another concerning a few of the interpretations that emerged from the discussions.

3.1. The Knowledge Base for Teaching

Although the case presented is very concise and does not contain details regarding previous and subsequent situations, context and other possible approaches, it made the delimitation of several types of knowledge involved and their interrelation possible. For each of the categories of analysis, excerpts of personal written reports made by the participants will be herein included as examples.

Concerning **subject matter content knowledge**, the following were considered: proportion and equivalence; music notes; the distinction between a semibreve and a minim,

taking into account the script of music notes and its time duration; mathematical knowledge; inclusion; quantity conservation; fractions; sequence; equivalent fractions and proportions between two amounts; quaternary and binary tempo; bi-univocal relations; graphical representation of music; fractioning of tempo; and knowledge of formal musical theory.

> *The mathematical knowledge involved in this relation is related to the concept of equivalent fractions and to the proportion between two quantities, two concepts that belong to the field of numerical relations and which, regardless of being taught, are naturally developed by the kids in the right situations. It can be said, though, that it is a bit premature to demand those concepts to be constructed by a seven-year-old. It would also be necessary for the child to have previously constructed the concepts of inclusion, conservation of amount, and bi-univocal relation* (T 14).

Concerning a group that is herein generically named *pedagogical content knowledge*, other types of the knowledge base pointed by Shulman (1987) were observed: students, goals of education, curriculum; school; teaching strategies; teaching and learning theory and principles; principles and techniques of classroom management; aspects of student learning (considering cognition, motivation and development process); programs and instructional material.

Considering the case and the day-to-day situations experienced by the teacher educators, the following contents were discussed: the student's developmental stage and level of abstraction; learning stages and styles; the students' personal rhythm and life stories; different personal repertoires and previously acquired knowledge; different paths chosen by the students for the construction of concepts – students construct concepts at different time rates and using diversified models as starting points –; the notion of time and developmental level of a seven-year-old student; how the child perceives the school and what it means to the students; student motivation; the teachers' individualized attention; the problem of methodological knowledge not guaranteeing the student's learning; the relations between concepts and daily life; the need for the teacher to know the student's personal learning styles; the diagnosis of previous conceptions; styles of teaching; teaching planning.

> *The problem for which the student demonstrated to be 'unable' to provide a solution for was related to the understanding of the proportion of time between the different music notes. She did not possess enough knowledge to understand the difference between the duration of the sounds represented by the semibreve and minim, music notes, which involved, respectively, the quaternary (C 1 2 3 4) and binary (C 1 2) tempos. The problem therefore is mathematical. To recognize that difference would be to posses the specific knowledge demanded by fractioning from unity. Considering that situation, it would be ineffective (which turned out to be the case) to try creative ways to solve the problem: "...little*

bricks, pet and car sounds, train and ship whistles..." The reason for that is the fact the concept of proportion had not been previously learned by the student. Had that happened, there would have been no problem for her to learn the distinction between the music notes. That was certainly true to the case, since the resource used by the teacher after she tried slicing the apple – eating the apple –, was the key resource. The type of knowledge involved in the case at hand is empirical, practical, and not systematized. It is a type of knowledge that is directly connected, to a certain extent, to the ability in dealing with that kind of situation (T 5).

The participants also established several hypotheses related to *pedagogical content knowledge*, that is, knowledge demonstrated by the teacher when teaching a specific topic. Many of the participants established relations between specific content knowledge and how to teach such content, which in turn referred to situations experienced by them in their professional life, in ways that surpassed the contents of the case study, but were triggered by it. The focus of the discussions concerns Schön's concepts of *reflection-on-action* and *reflection-over-action*, connected to the educators' professional learning. The strategy of the apple conceived by the teacher (more specifically the strategy of eating the apple), as a response to Juliana's questions, was considered to be fruit of the process of *reflection-on-action*. In other words, a different reading of the situation, considering all types of knowledge involved in it, based on the interpretation of clues offered by the student was accomplished.

Such is an unpredictable situation for which a solution was made possible, in ways that offered conditions for meaningful learning to the student. A good part of the discussion (in the smaller groups and in the bigger one) was related to the challenges of these processes in the activities of teacher education and the dilemmas usually faced by them in their pedagogical practices.

The diversity of types of knowledge involved in the profession of teaching, as we perceive by reading the case at hand, made me reflect over the complexity of being a teacher. We see, for example, that a specific knowledge of the content to be taught exists – in 'Juliana', the proportion between music notes –, which the teacher must posses. There also exists a content related to how the child learns and how he or she demonstrates that learning. Making use of all of these types of knowledge, the teacher will conceive his or her actions, aiming to guarantee that the children construct their own knowledge. Without a doubt, it is a very complex activity, and one that demands a lot of reflection. In 'Juliana', the teacher Marli managed to guarantee her student's learning, even having already "...used all of the known didactic techniques..." by employing knowledge constructed in her practice and communication with the girl. The knowledge she had of how to teach the content was not enough in her action. She searched for other elements, and only by doing so she could teach the child, making use of an unexpected situation that at first had no relation to music (T 17).

3.2. Some established Theoretical Relations

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The case study revealed different interpretations based on diverse theoretical considerations. Personal theoretical orientations notwithstanding, the participants were willing to exchange ideas and try to understand and interpret the teaching case under different theoretical frames from the one adopted, which in some cases allowed for re-investments in their own theoretical options, declared in ways to contrast with the others. The analyses carried out in different moments were either based on Piaget's Cognitivism or on Vygotsky's Socio-Interactionism. One of the analyses stood out from the others, since it was grounded in behavioral analysis, and from it different theoretical referentials were confronted. Such theoretical readings consider the knowledge base for teaching, more specifically the pedagogical content knowledge related to the presented teaching and learning experience. In the present work, only one of the behavioral analyses is offered as an example:

Juliana's behavioral repertoire was too lacking for her to be able to differentiate the duration of the sounds represented by the music notes semibreve and minim, which involved, respectively, the quaternary (C 1 2 3 4) and binary (C 1 2) tempos. The problem observed is, therefore, mathematical, since to be able to notice that difference would be to exhibit the behavior of fractioning from a whole or unity. [...] If that is so, what does explain the change in Juliana's behavior? A sudden insight – an 'interior look' –, or the result of a process of a behavioral exchange between Juliana and her teacher Marli? We defend the second hypothesis. At the beginning of this exchange, the teacher was unsuccessful in teaching the student the solution for the problem, since Marli did not posses favorable conditions for that, that is, Marli was not aware of the "Sd's" – translatable as 'clues' or 'hints'. Juliana's answers, as a consequence of inadequate clues, signaled that for Marli, "...since Juliana returned as if nothing had been taught before...": "the proportion of double and half simply did not exist". That signalization, in the form of answers, which constituted new "Sd's" from Juliana, made Marli abandon the innocuous resources she was using and start looking for conditions that would be able to ensure effective teaching, and which would alter her behavior as a teacher, in function of her interaction with the student: she used an apple, showing it to Juliana and slicing it in half, associating each of the parts of the sliced fruit with the concept of the minim music note. [...] Using the apple might be understood, in this context, as a 'hint' directed to Juliana, affecting her in a positive way. It might also be considered as a 'clue' for Juliana to express herself [...] With that assertion, Juliana demonstrated to be able to make an analysis (fraction of the unity) through the indication of 'inverse' or 'reverse' – the synthesis, or the joining of the parts in a whole. We admit the hypothesis that Juliana, in this stage of the interaction with her teacher, demonstrated to be able to understand the concept of proportion. Said demonstration, though, did not work as a "Sd's" so that Marli could answer and therefore acknowledged positively her student's behavior, indicating her success. In fact, what happened was that "the teacher almost lost it" [...] We feel that, with that attitude, Marli herself had not understood that the concept of proportion in the field of music (demonstrated by Juliana) could be related to the concept of the duration of sound – as interconnected concepts. The fact is that Marli continued to look for more favorable conditions, for new "Sd's" ("she decided to try it again, differently. 'Juliana, which takes the longest time to eat, an entire apple or half an apple?'"). The new approach led to Juliana's correct answer, and besides that, the discrimination of the duration of sound ("that's just like the semibreve, which lasts longer than the minim, which lasts exactly half the time the semibreve lasts"). Again, the text omits if Juliana's answer would be considered positively, explicitly or implicitly, by Marli. Anyway, Marli must have presented a favorable reaction, so that Juliana could proceed by asking "is that why we hold our finger and count 1 2 3 4 for the semibreve and 1 2 for the minim?" That is a question whose answer by the teacher is also absent from the text. It is an interesting question. It attests to the fact that there were two discriminations involved in the problem, and also

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sustains the understanding in Behavioral Analysis that if a give pre-requisite for the learning of the solution is not part of a person's behavioral repertoire, it might be installed and probably lead to the solution. In Juliana's case, a history of familiar or otherwise precedents that resulted in the lack of basic repertoires could be changed by social interaction, as in fact it was observed" (Marcelo Quintino Baptista, Universidade Federal do Pará)

4. Final Considerations: Aspects of the Teacher Educators' Professional Learning Processes

The analysis of cases more directly connected to the teaching practice and the pre-service experience assumed the central role in the participants' discussions, which were very interesting and not always resulted in consensus. Such discussions were made mostly taking into account the context of their own professional trajectories. The pre-service teaching experience was not always considered as an isolated, *pro forma* and meaningless experience, lacking theoretical and practical support. Many of the teacher educators pointed out that important learning was acquired during the initial experiences provided by pre-service teacher education programs. Other elements that helped the comprehension of the case, as indicated by the teachers, were: the domain of specific content; the curriculum adopted by the teacher education programs; the integration between the disciplines; the interference of personal variables; the school culture; the influence and importance of peers; the consideration of the elementary, medium and high schools as educational agencies for promoting professional learning of teaching and the importance of direct supervision and orientation of the pre-service educational practices concerning fundamental aspects – such as observation, the elaboration and use of field journals; the planning of teaching activities that comprehend all of the stages necessary to its realization, classes and reflection over classes and self-evaluations, amongst others. These constitute professional knowledge to be acquired during the first stages of professional learning, and that implies the responsibility of the university and the school as formative entities. The need for the support – anchored in theory and organized in realist fashion –, that makes the performance demanded by the planning a possibility; the creation of mechanisms that allow the teacher to recognize the importance of the educators' life; resources and conditions for the future teacher to move to and from the physical space where the internship occurs; and a selection

of schools that effectively exert a formative influence, are also elements that were listed as fundamental for the better use of the formative space existent in the courses.

Many of the participants limited themselves to generic aspects of difficulty faced in the initial years: learning by trial and error; limits to their personal professional development, caused by the excessive number of classes they had to teach, which offered difficulties related to the time and distance necessary for the analysis of their own teaching, to further their studies, and to overcome problems that may eventually be detected.

The teachers consider, as a rule, the process of professional learning as a continuum throughout their lives. Such process involves technical capabilities; critical sense; self-criticism; reflection; scientific support, and to some, art. The preparation necessary for the confrontation of the singularities of daily life is considered as an important component of learning. The teachers mention as learning sources the models to which they were submitted during the schooling and professionalization processes; the students (learning to 'read' the student, to understand him or her, and developing classes in a way that this student might learn); their peers; difficulties and impasses of day-to-day life, errors, dilemmas and challenges faced. The teachers mention having learned to look for information; seeing situations under different points-of-view; reinterpreting experienced situations and student behavior based in more trustable indicators; considering research as an important source of knowledge for teaching. They also indicated difficulties related to the beginning of their careers, which range from the domain of specific content, administration of time; interpretation of student errors; comprehension of different styles of learning, etc., to the more bureaucratic procedures of the school and school culture. School life is also a source of professional learning and professional knowledge, which is learned when one is immersed in the school life of specific cultures and sub-cultures. The classroom and direct contact with the students were also seen as sources of learning of abilities they had not known, characteristics they thought they did not posses, and feelings they did not identify.

The teachers analyzed the educative models to which they were exposed, pointing aspects that imposed difficulties to a more significative professional learning, or directed that learning towards a technical reductionism: fragmentation of the contents of the different disciplines; dichotomy of theory and practice and the overrating of the former and

underrating of the latter; the domain of technique for technique's sake alone; the standardization of classes regarding orientations that were based almost exclusively on the delimitation of the specific content knowledge to be prepared; class planning that rigorously obeyed the then current patterns; activities of discussion without justification; reports that were impeccable according to pre-established models, but meaningless regarding the singularities and challenges of concrete situations of teaching; the domain of specific content knowledge taken as a guarantee of efficient teaching.

The initial stages of teachers' learning are also considered as occurring before their admittance to school, a consequence of the exposition to the social significance of 'school', 'teacher', 'teaching', and 'student'.

> *We learn to be teachers even when we still do not intend to* (T 13).

> *[...] I have learned that being a teacher is a continuous process that involves technical preparation, critical sense and self-criticism, scientific support, and a bit of art. One must be disposed to learn and overcome always. [...] Although I understand the importance of the technical and scientific incentives necessary for the practice of teaching, I feel it is extremely important to be prepared for and knowing how to deal with, the unusual situations that may arise in daily professional life* (T 22).

> *I believe that professional learning for teaching does not end before 5, 10 years of practice, but every teaching experience, with different groups of students, all of them having their own peculiarities, characterizes moments of rich exchange and mutual learning. In that way, the process of professional learning – which began, in my case, ten years ago –, is translated into a new challenge at every new period. This may happen in function of our own expectations and perspectives, which broaden as we grow and overcome certain issues, like the impact of the first classroom, the initial contact with the students, etc. Consequently, the discussions regarding teaching and the role of the educator in this process lead us to the responsibilities that become every time more demanding in our professional life, so that it becomes more effective and adequate to the patterns required by the current work market* (T 7).

> *I've received very good theoretic knowledge, but not enough to know how to read the reality, which I would face later on. Actually, no theoretic formation may replace the experience of practice [...] Little by little I got used to being called a teacher – it was strange in the beginning, since I still did not see myself as teacher. Today, six years later, I see myself as a teacher and educator in constant formation, each day more distant from that naive teacher I used to be in the beginning of my career, though with the same eyes, filled with wonder facing the reality that unfolds itself in nuanced ways before me. I have learned and still learn with every student and every class, with my peers and the administrative body. Above all, I've learned that being a teacher is to be different not because of one's own will, but because we become a point of reference, whose opinion and position, as simple as they may be, have differentiated meaning and impact* (T 8).

Some of the participants denied the existence of professional learning occurring during the pre-service programs, usually favoring the argument of learning being connected with the demands of practice. *Learning from experience* gained significant weight whenever the impact of pre-service courses was considered. Some of the participants mentioned not observing any significative learning happening during the period, and not remembering any

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of the subject matters worked in the classroom, not even when classes prepared by them were concerned. When they remembered some of the learning, it was regarded as irrelevant considering the nature of the work performed, and referring basically to the construction of instructional material.

Part of the group, though, points out (and sometimes analyzes or justifies) learning that occurred during the pre-service teacher education courses which is considered important to professional life, such as: the importance of preparing classes; being secure and letting be perceived by the students as being secure; being clear and concise in exposition; guaranteeing student feedback regarding the teacher's performance; guaranteeing that the students are as up-to-date as the teacher is; demanding student presence and punctuality, as well as the turning in of assignments on the predicted dates; not allowing students to speak of other teachers; knowing that seriousness and care for the profession affect in positive ways the relations established with the students; knowing that it is possible to be sensible to student speech and expressions; knowing that the physical presence of the teacher may inhibit the students; knowing that being a teacher is not only being an actor, in the sense of playing a role in front of an audience, but ensuring that that performance is backed by careful rehearsal over the content and also the time to act it; learning to learn with whom is being taught; being alert to the effect that the behavior of the teacher has on the listener; being careful with the student's process of learning during class; the need of making a systematized, though flexible plan, in function of any situations that might arise; learning about oneself; overcoming the insecurity of facing a classroom and teaching; being able to face the classroom, but not consequently being self-sufficient; knowing that the teacher does not know everything and can count with the help of other professionals to improve his or her own performance; being aware that classroom situations are relative; knowing that the teacher may have several preferences regarding the type of students he or she wants to work with; knowing that many situations may be observed at any given time; knowing oneself when preparing activities, selecting methodologies and forms of assessment for the students. Some of the participants pointed out the spaces of teaching practice and supervised internship as being important in the definition of their career paths and professional options.

> *The creation of spaces for the discussion over the structure of my classes, the teaching program and evaluation system usually scares my students. Knowing that the elementary, medium and high school*

> *teaching practices do not encourage (most of times) the student to discuss, plan and decide their own demands, and establishing with the teacher the means to be employed and the goals to be reached, it is expected that the teacher who does not deliver his or her closed programmatic content when teaching may be seen as a new element that usually brings anxiety. With the development of classes, this anxiety subsides. I do not feel that affects learning. That affects the way my students face the other disciplines and teachers, and that displeases my peers a lot* (T 4).

The participants built a very interesting frame regarding professional learning, considered by them as fruit of *learning by experience* – in other words, learning that was acquired during the exercise of the profession, such as: to use simple language, appropriate for the student; being secure in teaching situations, when there's domain of the concept; every day something new is learned, and every classroom is different; there are no ready-made recipes and pre-established routes, which do not need adjustments; the school has a routine, a culture, a dynamic, and journals, teaching plans, assessment processes, etc., must be made according to the rituals and peculiarities of the school's context, culture and history; being more secure in relation to content and how search it; exchanging learning with peers; using certain teaching strategies that seem to have more impact in the involvement and learning of the students; being secure when leading the program and conducting the disciplines; learning with the students the best way to teach them; learning with peers concerned with similar themes and facing common challenges and problems; contents and teaching methods; teaching planning; the mastering of the specific content knowledge in a way that makes room for diversified and daring strategies in the classroom, improvisation and facing questionings of different natures from students; the comprehension that there are no pre-established paths – the teachers must build their own paths throughout his or her professional life; to propose challenges in the classroom, knowing how to lead concepts based on common sense to the level of scientific knowledge; being secure in relation to the involvement of the students in their processes of professional learning; being secure in relation to the evaluation process.

The list above, though, was not considered exhaustive by the teachers, who admitted facing diverse challenges, dilemmas, and difficulties. To many, the challenges consist professional learning already acquired by other colleagues, such as: being certain how to deal with students who start digressive and irrelevant discussions; to dominate forms/styles of teaching that are more efficient for student learning; to acquire emotional support in order to learn how to deal with the institutional and group peculiarities; to know the methods of financing for the execution of projects; to be more creative in the sense of

proposing different activities in the classroom, as well as dynamics that motivate study and learning; to improve the variety of techniques; to improve voice volume; to better involve the students in a way to provoke participation and decrease the number of absentees; to better develop and put to practice class and course plans – and acquiring the objectivity and clarity that that requires; the constant update of contents; student evaluation and self-evaluation; innovative classes, with greater participation and student interest; greater creativity and dynamism in teaching; to put forth differentiated work, which may help students to overcome their learning difficulties; to improve the ways of dealing with controversial matters related to the discipline; knowing how to deal with the diverse tasks that are required from the teacher every day; knowing how to deal with institutional interventions in classroom work.

Considering the learning that was acquired, and the learning that the teachers aim to acquire, the diverse types of learning that gradually constitute the base knowledge of the teachers can be outlined.

> *I've learned something important during my professional life: that I should use simpler language when interacting with my high school students [...] I feel secure when I teach a discipline whose content I'm familiar with, because to me, the preparation and domain of the specific content knowledge are fundamental for the practice of teaching. What usually disquiets or worries me – what I feel I need to have improved – is the fact that I'm sometimes not sure how to deal with students that are capable of starting discussions that have the flavor of mere digression: in other words, discussions that are irrelevant and inopportune, not related to the didactic thread of a given subject, and that are unrelated, in a coherent way, with other subjects, including those of daily life* (T 1).

> *I can attest that with every day, every classroom, and every moment, I learn something new, and that's what motivates me to teach. Regardless of how further you dominate a given content, the way you teach must vary from subject to subject. To certain subjects, verbal instruction should suffice. To others, body language might be necessary. [...] When I was accepted into the university, I felt very lost, since I was suddenly immersed in a culture that was very different from my own, and did not know anyone in town. I was also taking over the teaching of disciplines of other teachers, who had recently retired. I had to learn the school's rules: journals, teaching plans, assessment processes etc. My situation required me to contact peers and the former teachers, from which I acquired part of the didactic material and some tips on how to conduct classes in an university. Three years later, a lot has changed in me, and in the disciplines I took over. But something is still the same: I still want for my students to be each day more involved with the university, and not make of it a simple means for attaining a degree. Among the aspects that inspire me most certainty is the domain of the specific content knowledge related to the disciplines, but I need to improve my styles of teaching, in order to provide more efficient learning for the students; to master the contents that are tangentially related to the disciplines I teach; to achieve greater emotional support for dealing with the "cliques" and knowing the financing methods for the execution of projects* (T 3).

The teachers presented their professional perspectives in usually clear and articulate fashion. The processes of professional learning surrounding the entire life of the individual are transparent in the analyses of these professionals: the necessity of the broadening of

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knowledge of different natures, including the knowledge related to the use of computer science in education; the will to invest in their profession/career and the commitment with the education of other teachers; the recognition of their roles as researchers, producing knowledge and interfering with different educational realities.

> *I never thought I knew so little about education, since I always saw myself as being an exemplary educator. I'm currently living a contradiction. On one hand, I'm demanding too much from myself because of the many errors I've made, mainly on pre-service teacher education program, and wish I could stop and just study for a while. On the other, I see that all that I've learned in the post-graduate program can be transferred to the practice of teaching. Then I start to correct the errors, and I realize that I've also got a lot of things right. I don't want to stop* (T 10).

> *In the next ten years, I see myself as a researcher and a teacher, doing team work with the future teachers, who are just now learning how to research. I see myself maintaining constant dialogue with the teachers of elementary school, regarding the knowledge we are producing. I see myself directly interfering in the education of the math teacher, especially in what refers to the learning of mathematical concepts. This is a goal that I've set for myself even before the post-graduation program. In this program I've researched the formation of the concept of 'number', and will continue to do so [...] I'm already part of a research group that investigates the teaching of mathematical concepts, and have presented works in the area, having contacted researchers of different parts of the country. It is a passion that runs over my official work hours. I like what I do* (P 8).

As a provisory conclusion, It can be said, considering the data presented, that the use of teaching cases has formative and investigate potential in revealing indicators related to the base knowledge for teaching and the nature and processes of construction of pedagogical content knowledge, grounded on the learning processes of teachers educators. Said use was responsible for the establishment of several theory-practice relations, and theorizations over pedagogical practice, revealing itself as a promising strategy in post-graduation programs that receive teacher educators, even in the absence of a specific structure that benefits the formation of such teachers.

REFERENCES

BARNES, D.(1992) The significance of teachers' frames for teaching. In: Russell, T., Munby, H. (eds.). *Teachers and Teaching*. Bristol, The Falmer Press, 1992. p.109-123.

RUSSELL, T. (1993) Reflection-in-action and the development of professional expertise. *Teacher Education Quarterly*, vol 20, nr 1, 1993, p. 51-62.

SCHÖN, D. (1987) Educating the reflective practitioner. San Francisco Jossey-Bass, 1987.

SHULMAN, L. (1986) Those who understand: knowledge growth in teaching. *Educational Researcher* 15(2), p. 4-14.

SHULMAN, L. (1996) Just in case: reflections on learning from experience. In Colbert, J., Trimble, K., and Desberg, P. (eds.) *The case for education: contemporary approaches for using case methods*. Needham Heights, Massachusetts: Allyn & Bacon, p. 197-217.

SHULMAN, L. (1987) Knowledge and teaching: the foundations of the new reform. *Harvard Educational Review*, 57(1), p. 1-21.

WILSON, S., SHULMAN, L.S. & RICHERT, A.E. (1987) 150 ways of knowing: representations of knowledge in teaching. In J. Calderhead (ed.), *Exploring teachers' thinking*. Great Britain: Cassell Educational Limited, 1987, pp. 104-124.

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